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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/931,493	08/16/2001	Maurice W. Peterson	99CR098/KE	3675

7590 09/26/2007

Rockwell Collins, Inc.
Attention: Kyle Eppele
M/S 124-323
400 Collins Rd. NE
Cedar Rapids, IA 52498

EXAMINER	
BAYARD, EMMANUEL	

ART UNIT	PAPER NUMBER
2611	

MAIL DATE	DELIVERY MODE
09/26/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	09/931,493	PETERSON ET AL.	
	Examiner	Art Unit	
	Emmanuel Bayard	2611	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *23 July 2007*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-18 and 20* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-18 and 20* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

This is in response to amendment filed on 7/23/07 in which claims 1-18 and 20 are pending. The applicant's amendments have been fully considered but they are moot based on the new ground of rejection therefore this case is made final.

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. Claims 1-18 and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Salinger (U.S. Patent No. 6,252,912) in view of Wessel U.S. patent No 6,275,685 B1.

As per claims 1, 10, Salinger discloses: a transmitter which translates a baseband transmitter input signal to a local oscillator frequency to generate a transmitter output signal (col. 7, lines 7-10, col. 15, lines 30-31, discloses the modulator 12 of fig. 1 modulates the signal with a local oscillator, col. 5, lines 52-54, Salinger teaches that the modulation translates a baseband signal to a oscillator frequency); calibration circuitry coupled to the transmitter (fig. 1 elements 26-28 and col.) suitable sequentially generating a gain imbalances (see col.7, lines 540-65); predistortion circuitry coupled to the signal source, the transmitter and the calibration circuitry, the predistortion circuitry receiving the source signal (fig. 1, 14, 20) and the phase error

estimate of the transmitter as inputs and providing as an output the transmitter input signal as a function of the phase error estimate of the transmitter (col. 15, lines 35-54, fig. 1, output of 22).

However Salinger does not teach a calibration circuitry for generating at least two of a phase error estimate and gain error estimate.

Wessel et al teaches a detector is functionally equivalent to the claimed (calibration circuitry) for generating at least two of a phase error estimate and gain error estimate (see figs 4-7 elements 60, 82, 84 and col.7, lines 7-65).

It would have been obvious to one of ordinary skill in the art to implement the teaching of Wessel into Salinger as to compensate for changes in the high power amplifier gain and phase distortion characteristic and achieve the very high levels of spectral purity as taught by Wessel (see abstract and col.7, lines 3-6).

Claim 2, Salinger and Wessel in combination would teach further discloses wherein the calibration circuitry is configured to generate the phase error estimate of the transmitter as a function of an angle of intersection between a desired transmitter envelope and an actual transmitter envelope and the gain error estimate of the transmitter as a function of variation in the actual transmitter envelope, and wherein the predistortion circuitry provides the transmitter input signal also as a function of the gain error estimate of the transmitter generated by the calibration circuitry (see Salinger and col. 5, lines 4-7) as to compensate for changes in the high power amplifier gain and phase distortion characteristic and achieve the very high levels of spectral purity as taught by Wessel (see abstract and col.7, lines 3-6).

Claim 3, 12, 18, Salinger teaches further discloses the calibration circuitry is configured to determine semi-major and semi-minor axes of an elliptical transmitter

waveform, and to generate the gain error estimate of the transmitter as a function of the determined semi- major and semi-minor axes (col. 12, lines 41-59).

Claim 4, 7, 16, Salinger further discloses the calibration circuitry is configured to determine a centroid of the actual transmitter envelope (col. 12, lines 41-59). Claim 5, 8, Salinger further discloses the calibration circuitry is configured to estimate dc offsets in an in-phase component and a quadrature component of the source signal as a function of the centroid of the actual transmitter envelope (col. 5, lines 4-7, col. 12, lines 41-59).

Claim 6, 9, 17, Salinger further discloses the predistortion circuitry is configured to provide the transmitter input as a function of the estimated dc offsets in the in-phase and quadrature components of the source signal (col. 5, lines 4-7).

Claim 13, Salinger further discloses determining a centroid of the actual transmitter envelope (col. 5, lines 4-7); and estimating dc offsets in an in-phase component and a quadrature component of the source signal as a function of the centroid of the actual transmitter envelope (col. 5, lines 4-7, col. 12, lines 41-59).

Claim 14, Salinger further discloses predistorting the source signal to generate the transmitter input signal further comprises generating the transmitter input signal also as a function of the estimated offsets in the in-phase and quadrature components of the source signal (col. 5, lines 4-7).

Claim 15, Salinger discloses: a transmitter which translates a baseband transmitter input signal to a local oscillator frequency to generate a transmitter output signal (col. 7, lines 7-10, col. 15, lines 30-31, discloses the modulator 12 of fig. 1 modulates the signal with a local oscillator, col. 5, lines 52-54, Salinger teaches that the

modulation translates a baseband signal to a oscillator frequency); • calibration circuitry coupled to the transmitter (fig. 1 shows predistortion circuitry coupled to modulator 12) and generating a phase error estimate of the transmitter as a function of an angle of intersection between a desired transmitter envelope and an actual transmitter envelope (col. 12, lines 41-59); a gain error estimate of the transmitter as a function of variation in the actual transmitter envelope (col. 5, lines 4-7), and a • dc offset estimate in an in-phase component and a quadrature component of the source signal as a function of a centroid of the actual transmitter envelope (col. 12, lines 41-59); • predistortion circuitry coupled to the signal source, the transmitter and the calibration circuitry, (fig. 1, 14, 20) the predistortion circuitry receiving the source signal and at least one Of the phase error estimate, the gain error estimate, and the dc offset estimate as inputs and providing as an output the transmitter input signal as a function of at least one of the phase error estimate, the gain error estimate, and the dc offset estimate (col. 15, lines 35-54, fig. 1, output of 22).

However Salinger does not teach a calibration circuitry for generating at least two of a phase error estimate and gain error estimate.

Wessel et al teaches a detector is functionally equivalent to the claimed (calibration circuitry) for generating at least two of a phase error estimate and gain error estimate (see figs 4-7 elements 60, 82, 84 and col.7, lines 7-65).

It would have been obvious to one of ordinary skill in the art to implement the teaching of Wessel into Salinger as to compensate for changes in the high power

amplifier gain and phase distortion characteristic and achieve the very high levels of spectral purity as taught by Wessel (see abstract and col.7, lines 3-6).

Claim 20, Salinger further discloses the calibration circuitry simultaneously generates at least two of the phase error estimate, the gain error estimate, and the dc offset estimate (col. 5, lines 4-7).

Conclusion

3. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Gentzler U.S. Patent No 6,21,733 B1 teaches a predistortion compensation.

4. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Emmanuel Bayard whose telephone number is 571 272 3016. The examiner can normally be reached on Monday-Friday (7:Am-4:30PM) Alternate Friday off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Chieh Fan can be reached on 571 272 3042. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

9/21/2007

Emmanuel Bayard
Primary Examiner
Art Unit 2611

EMMANUEL BAYARD
PRIMARY EXAMINER